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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,743	06/13/2006	Seok Soo Kim	930086-2029	5014

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Ronald R Santucci
Frommer Lawrence & Haug
745 Fifth Avenue
New York, NY 10151

EXAMINER	
BLAND, LAYLA D	
ART UNIT	PAPER NUMBER
1623	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/582,743	KIM ET AL.	
	Examiner	Art Unit	
	LAYLA BLAND	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 14-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 14-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This office action is a response to Applicant's amendment submitted February 7, 2008, wherein claims 8-13 are canceled, claims 1 and 7 are amended, and new claims 14-19 are added. Claims 1-7 and 14-19 are currently pending and are examined on the merits herein.

In view of the cancellation of claims 8-13, all rejections made with respect to those claims in the previous office action are withdrawn.

In view of Applicant's amendment submitted February 7, 2008, the rejections of claims 1 and 7 under 35 USC 112, second paragraph, as being indefinite, are withdrawn.

The following rejections of record are maintained and modified to include new claims 14-19.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4 and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onda et al. (US 4,091,205, May 23, 1978, PTO-1449 submitted May 13, 2006).

Onda et al. teach a process for preparing cellulose ethers comprising etherification of alkali cellulose followed by pulverization into a powder [see abstract].

Onda et al. teach a method wherein, starting from wood pulp, 100 parts of alkali cellulose, formed with sodium hydroxide, were placed into a reaction vessel and 15 parts of methyl chloride were added. The etherification reaction was carried out with stepwise elevation of temperatures; 40°C for 2 hours, then 50°C for 1 hour, then finally 80°C for one hour to produce the crude etherified product [column 6, Example 2]. The methylcellulose product was then pulverized to form a fine powder, having a particle distribution rate of 0-1.5% for particles of smaller than 100 mesh [column 5, Table I; column 6, Table III; column 7, Table V]. Loose bulk densities ranged from 0.176-.503 and tapped bulk densities ranged from 0.379-0.833, including 0.571, 0.465, 0.552, and 0.544 [column 5, Table I; column 6, Table III; column 7, Table V].

Onda et al. do not teach a method starting from pulverized cellulose and do not teach a method wherein the first, second, and third temperatures are 40-50°C, 55-60°C, and 85-90°C, respectively.

It would have been obvious to one of ordinary skill in the art to prepare cellulose ether from pulverized cellulose, employing the claimed temperature ranges. It has been held that merely reversing the order of steps in a multi-step process is not a patentable modification absent unexpected or unobvious results. Ex parte Rubin, 128 U.S.P.Q. 440 (P.O.B.A. 1959). Cohn v. Comr. Patents, 251 F. Supp. 437, 148 U.S.P.Q. 486 (D.C. 1966). Onda et al. disclose the use of temperatures which fall within those recited in claim 1, and are very close to those recited in the narrower claim 2. It is considered

well within the skill of the skilled artisan to optimize these temperatures, especially given the guidance provided by Onda et al.

Response to Arguments

Applicant's arguments filed February 7, 2008 have been fully considered but they are not persuasive.

Applicant argues that Onda uses wood pulp as a starting material and pulverizes the final product, whereas the present invention uses pulverized cellulose and does not include a grinding step after reaction. The presently claimed invention is drawn to a similar process as that taught by Onda; however, the pulverization step is carried out before reaction instead of after reaction. It has been held that merely reversing the order of steps in a multi-step process is not a patentable modification absent unexpected or unobvious results. Ex parte Rubin, 128 U.S.P.Q. 440 (P.O.B.A. 1959). Cohn v. Comr. Patents, 251 F. Supp. 437, 148 U.S.P.Q. 486 (D.C. 1966). The skilled artisan would expect that cellulose ethers prepared from pulverized cellulose would have a small particle size without need for a further grinding step; this is not unexpected or unobvious. It is noted that only new claims 14-19 specifically omit a grinding step from the claimed process.

Applicant argues that Onda teaches a neutralization step that is omitted in the present invention. Applicant futher argues that modification of the teachings of Onda to eliminate the neutralization step would not be successful. The instant claims use the open language "comprising," which permits the inclusion of other steps in the method.

The claims do not stipulate that no neutralization step should be performed. Thus, arguments drawn to the presence or absence of a neutralization step are not relevant.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onda et al. (US 4,091,205, May 23, 1978, PTO-1449 submitted May 13, 2006) as applied to claims 1-4, 9, and 10 above, and further in view of Hitchin et al. (GB 909,039, October 24, 1962, of record).

Onda et al. teach as set forth above.

Onda et al. do not teach the use of a diluent gas.

Hitchin et al. teach the use of an inert diluent in the methylation of alkali cellulose with methyl chloride. Suitable diluents are dimethyl ether and diethyl ether. In diluting the methyl chloride, heat transfer is facilitated and the reaction can be controlled. The diluent also functions as a vehicle in assisting the penetration of the alkali cellulose fibers by methyl chloride. The amount of diluent varies but good results were achieved using dimethyl ether as 45-90 percent by weight of methyl chloride [page 1, lines 61-78]. In one example, 600 lb of dimethyl ether was used for 320 lb of dry cellulose [page 2, Example 1].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a diluent in the above described method of Onda et al. The skilled artisan would have been motivated to do so and would have a reasonable expectation of success because Hitchin et al. teach that the use of an inert diluent such as dimethyl ether aids in controlling and facilitating the methylation of alkali cellulose.

Response to Arguments

Applicant's arguments filed February 7, 2008 have been fully considered but they are not persuasive.

Applicant argues that the teachings of Onda and those of Hitchins are drawn to preparing different products with different characteristics. This is not persuasive because, as discussed above, both Onda and Htichins are concerned with preparing cellulose ethers.

Applicant argues that the teachings of Hitchins represent an infinite number of possible solutions to a problem. As discussed above, Hitchins teaches the use of dimethyl ether and diethyl ether for control and facilitation of the reaction of alkali cellulose and methyl choride, and exemplifies the use of dimethyl ether. This is a specific teaching, and not one of an infinite number of possibilities.

Applicant argues that there must have been some finding that the use of diluent gas would have resulted in cellulose with excellent binding force and disintegration ability, which was sought by Onda. That is simply not the case. Onda teaches a method for producing cellulose ethers; Hitchins teaches the use of diluent gas to control and facilitate the same reaction. The skilled artisan would have expected success in using the diluent gas of Hitchins in the reaction taught by Onda because each reference teaches the reaction of alkali cellulose with methyl chloride, as discussed above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAYLA BLAND whose telephone number is (571)272-9572. The examiner can normally be reached on M-F 9:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anna Jiang can be reached on (571) 272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Layla Bland/
Examiner, Art Unit 1623

/Shaojia Anna Jiang, Ph.D./
Supervisory Patent Examiner, Art Unit 1623